Information for
Mathematics 139.01
Advanced Calculus I
Fall Term 2007

1. Bulletin Description
   Advanced Calculus I. QS, W. Algebraic and topological structure of
   the real number system; rigorous development of one-variable calculus
   including continuous, differentiable, and Riemann integrable functions
   and the Fundamental Theorem of Calculus; uniform convergence of a se-
   quence of functions; contributions of Newton, Leibniz, Cauchy, Riemann,
   and Weierstrass. Not open to students who have had Mathematics 203.
   Prerequisite: Mathematics 102, 103, or 105.

2. Place and Times
   Room 119 Physics Building
   Tuesday and Thursday, 1:15 – 2:30

3. Instructor
   Harold Layton
   Electronic mail: layton@math.duke.edu
   Office: Room 221 Physics Building
   Office hours: Mondays, 3:00 – 4:00; Thursdays, 3:00 – 4:00

4. Course website
   http://www.math.duke.edu/~layton/139
   For general course information (including this information statement,
   homework assignments, and test dates).

5. Textbook
   Fundamental Ideas of Analysis, 3d or 4th printing,
   by Michael Reed.

6. Prerequisite
   Mathematics 102, 103, or 105.
   Linear Algebra (viz., Mathematics 104) is desirable.
7. **Homework**

Reading assignments and homework problems will be assigned weekly (approximately); homework problems will normally be due on Tuesdays. Homework should be written in pencil or black ink, and it must be submitted in hard copy (typewritten homework will, of course, also be accepted). All pages must be firmly fastened together.

*Homework must be legible.*

*Problem solutions must be written in complete sentences.*

*Students are strongly urged to work in groups!* (However, copying of another student’s work will be considered to be a violation of the Duke Community Standard.)

*Late Homework will not be accepted.*

Exceptions: a student who cannot submit work on time due to a short-term illness must notify the instructor promptly by following the Short-Term Illness Notification Policy. In the case of a long-term absence, a student must present a dean’s excuse, in accordance with standard university policy. Details are in the *Duke University Bulletin of Undergraduate Instruction*.

In addition to homework problem sets, some brief report papers may be assigned. These must be type-written and double-spaced, and they will be subject to the same late policy as described (above) for problem sets.

8. **Project: report paper**

About midway through the semester, a report paper will be assigned. The report can be about a mathematician who made a major contribution to calculus, about the history of a concept central to calculus, about an aspect of calculus that is beyond the scope of this offering of Math 139, or about an application of calculus in pure or applied mathematics. The paper must be typewritten, double-spaced, and not less than five pages in length, excepting title page, figures, and references. The submission of a project paper is a requirement for passing the course.

9. **Quizzes, Tests, and Final Examination**

Several short quizzes will be administered, normally on Thursdays (all quizzes will be announced in advance). Two or three tests will be administered during regular class meetings. A final examination will be administered on Tuesday, December 11, 7:00 PM — 10:00 PM.

10. **Attendance**

The *Bulletin of Undergraduate Instruction* states:

“Responsibility for class attendance rests with individual students, and since regular and punctual attendance is expected, students must accept the consequences of failure to attend.”

Attendance will not be formally recorded. However, frequent absences will be noticed and documented by the instructor, and the student’s academic dean will be notified. Failure to attend regularly and punctually will be considered cause for grade reduction, on the basis of a failure to participate in—and contribute to—the classroom experience.
11. Classroom Policies
The students and the instructor should work together to cultivate a classroom experience that is maximally conducive to learning.

Class participation is strongly encouraged.

Students arriving late should endeavor to minimize disruptions arising from their entrance.

The use of electronic devices is prohibited when class is in session.

The consumption of food is prohibited when class is in session.

Beverages may be consumed provided that they are in spill-resistant containers.

Frequently there will be a break, usually having a duration of less than three minutes, at about 2:00 PM.

12. Course Grade
A student’s course grade will be based on homework (problem sets and brief reports), class participation, quizzes, tests, the final examination, and the project. These will be weighted, approximately, as follows:

- Homework & class participation 15%
- Quizzes and Tests 55%
- Final examination 20%
- Project 10%

13. Honor and Character
On all submitted work students are required to indicate compliance with the Duke Community Standard by writing “DCS” beside their signature.

It is the policy of Duke University, and the belief of the instructor, that honesty and the cultivation of good character are more important than academic achievement or the appearance of academic achievement.

14. Policy Modifications
The instructor reserves the right to supplement or modify course policies.